

CLAIMS

What is claimed is:

1. A hybrid contact lens, comprising:
a substantially rigid portion; and
a substantially flexible portion coupled to the substantially rigid portion at a junction;
wherein the junction comprises an angled surface.
2. The hybrid contact lens of claim 1, wherein the angled surface comprises a substantially V-shaped surface.
3. The hybrid contact lens of claim 1, wherein the angled surface ranges between about 95 degrees to about 170 degrees.
4. The hybrid contact lens of claim 1, wherein the substantially rigid portion has a diameter that ranges between about 4.0 millimeters to about 12.0 millimeters.
5. The hybrid contact lens of claim 1, wherein the substantially flexible portion has an outer diameter that ranges between about 10.0 millimeters to about 18.0 millimeters.
6. The hybrid contact lens of claim 1, wherein the substantially rigid portion has an oxygen permeability DK value that may range between about 30 to about 250.

7. The hybrid contact lens of claim 1, wherein the substantially rigid portion is comprised of a material selected from a group consisting of: fluoro-siloxane acrylate, siloxane acrylate, poly-stryene siloxane acrylate, fluorosiloxane acrylate RGP, trimeththyl-siloxyl, methyl-methacrylate, ethyl-methacrylate, ethylene glycol di-methacrylate, octafluoro pentyl-methacrylate, tetra-methyldisiloxane, ethylene glycol di-methacrylate, pentafluoro phenylacrylate, 2-(trimethylsiloxyl) methacrylate, bis(2-metharyloxyphenyl) propane, N-[2-(N,N-dimethylamino)ethyl], onethacrylate, N-[2-(n,n-dimethylamino)ethy], methacryalte, vinyl-pyrolidone, N,N-dimathacrylamide, acrylamine, hydroxyethyl methacrylate, siloxane ethylene glycol di-methacrylate, trifluoroethyl methacrylate, pentafluorostyrene, pentafluoropropyl methacrylate, unsaturated polyester; p-vinyl benzyl hexafluoroisopropyl ether, and siloxanylalkylamide.

8. The hybrid contact lens of claim 1, wherein the substantially flexible portion is comprised of a material selected from a group consisting of: poly-2-hydroxyethyl-methacrylate; poly HEMA; hydroxyethyl acrylate; dihydroxypropyl methacrylate; polyethylaneglycol; acetoxysilane; trimethylesiloxyl; ethyleneglycol- dimethacrylate; phenylethyl acrylate; and polyethylene oxide.

9. The hybrid contact lens of claim 1, wherein the hybrid contact lens is constructed to include a prescription obtained from a wavefront aberrometer.

10. The hybrid contact lens of claim 1, wherein the hybrid contact lens is constructed to include a prescription for presbyopia.

11. A hybrid contact lens, comprising:

a substantially rigid portion; and

a substantially flexible portion coupled to the substantially rigid portion at a junction;

wherein the junction comprises at least two intersecting planes.

12. A hybrid contact lens, comprising:

a substantially rigid portion, the substantially rigid portion having a first curvature; and

a substantially flexible portion coupled to the substantially rigid portion, the substantially flexible portion having a second curvature that is greater than the first curvature.

13. The hybrid contact lens of claim 12, wherein the second curvature causes the substantially flexible portion to suspend the substantially rigid portion above an eye.

14. The hybrid contact lens of claim 12, wherein the second curvature causes the substantially flexible portion to decrease a contact force between an eye and the substantially rigid portion.

15. The hybrid contact lens of claim 12, wherein the second curvature enables a transfer of tear liquid under the substantially rigid portion.

16. The hybrid contact lens of claim 15, wherein the tear liquid under the substantially rigid portion provides an optical correction.

17. The hybrid contact lens of claim 14, wherein the optical correction may range between about one diopter to about ten diopters.

18. A hybrid contact lens, comprising:

a substantially rigid portion; and

a substantially flexible portion coupled to the substantially rigid portion;

wherein the hybrid contact lens includes a surface treatment that creates a substantially uniform tear film when the hybrid contact lens is positioned on an eye.

19. The hybrid contact lens of claim 18, wherein the surface treatment comprises OH chemical groups and NH chemical groups.

20. The hybrid contact lens of claim 18, wherein the surface treatment is an ionic surfactant.

21. The hybrid contact lens of claim 20, wherein the ionic surfactant is selected from a group consisting of: sodium dodecyl sulfide, lauryl sulfonic acid, a combination of

sodium dodecyl sulfide and lauryl sulfonic acid, and a substrate comprised of a combination of sodium dodecyl sulfide and lauryl sulfonic acid.

22. The hybrid contact lens of claim 18, wherein the surface treatment is a non-ionic surfactant.

23. The hybrid contact lens of claim 22, wherein the non-ionic surfactant is an ethylene glycol.

24. The hybrid contact lens of claim 18, wherein the surface treatment comprises a polymer.

25. The hybrid contact lens of claim 24, wherein the polymer is selected from a group consisting of: TEFLON and HEMA.

26. A method of prescribing a hybrid contact lens, the method comprising the steps of:

providing a contact lens that approximates an eye shape, the contact lens including at least one mark;

placing the contact lens on the eye;

creating an image of the mark and a portion of an eye;

measuring an aberration of the contact lens and the eye;

measuring a registration disparity; and

generating a prescription using the measured aberrations and the measured registration disparity.

27. The method of claim 26, wherein the step of generating the prescription using the measured aberrations comprises the step of:

performing an analysis utilizing an ocular surface profile of the contact lens, an initial contact lens thickness profile, and a residual contact lens and eye aberration error.

28. The method of claim 26, wherein the mark is selected from a group consisting of:
a circumferential mark, at least two circumferential marks, a central registration mark, at least two marks that are concentric with a contact lens center, and a mark that is responsive to infrared light.

29. The method of claim 26, wherein the registration disparity comprises an eye lens location relative to an eye pupil center or relative to a visual axis.

30. The method of claim 26, wherein the contact lens is a hybrid hard-soft contact lens.

31. The method of claim 30, wherein the hybrid contact lens is constructed to include a prescription obtained from a wavefront aberrometer.

32. The method of claim 30, wherein the hybrid contact lens is constructed to include a prescription for presbyopia.

33. A method of prescribing a hybrid contact lens, the method comprising the steps of:

providing a contact lens that approximates an eye shape, the contact lens including at least one mark;

placing the contact lens on the eye;

determining a coordinate of the mark and a pupil;

measuring an aberration of the contact lens and eye;

measuring a registration disparity; and

generating a prescription using the measured aberrations and the measured registration disparity.

34. The method of claim 33, wherein the step of generating the prescription using the measured aberrations comprises the step of:

performing an analysis utilizing an ocular surface profile of the contact lens, an initial contact lens thickness profile, and a residual contact lens and eye aberration error.

35. The method of claim 33, wherein the mark is selected from a group consisting of:

a circumferential mark, at least two circumferential marks, a central registration mark, at least two marks that are concentric with a contact lens center, and a mark that is responsive to infrared light.

36. The method of claim 33, wherein the registration disparity comprises an eye lens location relative to an eye pupil center or relative to a visual axis.

37. The method of claim 33, wherein the contact lens is a hybrid hard-soft contact lens.

38. The method of claim 37, wherein the hybrid contact lens is constructed to include a prescription obtained from a wavefront aberrometer.

39. The method of claim 37, wherein the hybrid contact lens is constructed to include a prescription for presbyopia.

40. A method of prescribing a hybrid contact lens, the method comprising the steps of:

providing a contact lens that approximates a shape of an eye;

placing the contact lens on the eye;

determining a direction of a light ray exiting the contact lens; and

adjusting the contact lens so that the light ray exits the contact lens substantially parallel to a visual axis.

41. The method of claim 40, wherein the step of adjusting the contact lens so that the light ray exits the contact lens substantially parallel to the visual axis comprises the steps of:

adjusting a slope of the contact lens; or
adjusting a thickness of the contact lens.

42. The method of claim 40, wherein the contact lens is adjusted to provide a visible light spectrum wavelength that has substantially equal areas under a photopic response curve.

43. The method of claim 40, wherein the contact lens is adjusted by the steps of:
multiplying a contact lens visible light transmission characteristic by a photopic eye response so that the visible light exiting the contact lens has substantially equal areas under a photopic response curve.